

REMARKS

Claims 1-59 were presented for examination, and claims 1-10, 13-27, 30-44, and 47-59 were rejected. Applicants note with appreciation the Examiner's indication of allowable subject matter in claims 11, 12, 28, 29, 45 and 46, which were objected to for depending from a rejected base claim. In the current amendment, claims 1, 9, 10, 18, 26, 27, 35, 43, 44 and 52 have been amended. No new matter has been introduced. Upon entry of the current amendment, claims 1-59 will be presently pending in this application, of which claims 1, 9, 18, 26, 35, 43, and 52 are independent. Applicants submit that pending claims 1-59 are in condition for allowance.

The following comments address all stated grounds of rejection. The Applicants urge the Examiner to pass the claims to allowance in view of the remarks set forth below.

Claim Amendments

Claims 1, 9, 10, 18, 26, 27, 35, 43, 44 and 52 have been amended to clarify and more fully appreciate the Applicants' claimed invention. Support for the amended claims can be found on page 7, line 20 to page 8, line 8; page 8, line 16 to page 9, line 4; Figures 1, 3 and 4; and throughout the remainder of the specification. No new matter has been introduced. Applicants submit that the presently pending claims are in condition for allowance.

Claim Rejections Under 35 U.S.C. §103**I. Claims Rejected Under 35 U.S.C. §103 As Being Unpatentable Over Bierman**

Claims 1-10, 13-27, 30-44, and 47-59 are rejected under 35 U.S.C. §103 as being unpatentable over G.M. Bierman "Using XML as an Object Interchange Format", University of Warwick, May 17, 2000 ("Bierman"). Applicants respectfully traverse this rejection.

A. Summary of Claimed Invention

The present invention is directed towards managing objects in a database that stores structured documents representing objects. Applications implementing objects in different programming languages may store objects to or retrieve objects from the database. The instances of the objects may be implemented in any programming language, and are translated into a structured document for managing in the database. The structured document, such as an XML document, provides a representation of the instance of the object.

In maintaining objects in the structured document database, the claimed invention requests to store an instance of an object to the database, and provides a structured document. The structured document represents the instance of the object and the attributes and attributes values for the class of the object. The content of the structured document representing the object is stored in the database. In accessing objects in the database, the claimed invention requests to access an instance of an object from the database storing structured documents representing objects. The instance of the object is obtained from the database and a structured document is generated to represent the object including attributes and attribute values of the class of the object. The structured document is returned in response to the request. After receiving the structured document, an object implemented in any programming language is generated to embody the object represented by the structured document, including attributes and attribute values of the class of the object.

The claimed invention provides for maintaining objects implemented in different programming languages from different applications in an object database that stores structured documents representing the objects. This allows an object database to support multiple

applications and multiple programming languages by storing objects in a structured document that represent the objects of the different programming languages. In this manner, applications using different programming language can share objects stored in the database.

B. Summary of Bierman

Bierman is an article that describes using XML as an Object Interchange Format (OIF) in conjunction with the standards of the Object Data Management Group (ODMG). Bierman is focused on proposing an alternative language and new XML document type of an Object Interchange Format Markup Language, OIFML, based upon XML. According to the ODMG standards, OIF is a specification language used to dump and load the current state of an ODMG-compliant object data management system (ODMS). For example, OIF can provide a file format for loading and unloading data from an ODMS. Bierman describes the details of the specification language of OIFML with respect to the structure and definition of objects and object attributes in an OIFML file.

C. Amended Independent Claims 1, 18, 35 Patentably Distinguished Over Bierman

Amended independent claims 1, 18, and 35 are directed to a method, system and program, respectively. These independent claims recite *requesting to store into a database an instance of an object implemented in a programming language*. These independent claims further recite providing at least one structured document representing the instance of the object including attributes and attribute values defined for a class. The content of the structured document representing the object is stored into the database that stores multiple structured documents representing multiple objects.

Bierman does not teach or suggest *requesting to store an instance of an object implemented in a programming language into a database that stores multiple structured documents representing multiple objects*. Rather, Bierman describes an XML markup language of a proposed Object Interchange Format Markup Language, OIFML, for dumping and loading the current state of an ODMG-compliant ODMS. As such, Bierman is focused on specifying a file format for loading and unloading object data from the ODMS. In contrast with the claimed invention, Bierman is not concerned with a request to store an instance of an object implemented in a programming language into a database that stores objects in a structured document. Bierman does not discuss any methods or mechanisms for processing a request to store an instance of an object implemented in a programming language into the database. Instead, Bierman discusses the details of the specification of the OIFML format. Therefore, Bierman does not teach or suggest *requesting to store an instance of an object implemented in a programming language into a database that stores multiple structured documents representing multiple objects*.

For at least the aforementioned reasons, Bierman fails to teach or suggest *requesting to store an instance of an object implemented in a programming language into a database that stores multiple structured documents representing multiple objects*. Therefore, Applicants submit that amended claims 1, 18 and 35 are patentable and in condition for allowance. Claims 2-8 depend on and incorporate the patentable subject matter of independent claim 1, as amended. Claims 19-25 depend on and incorporate the patentable subject matter of independent claim 18, as amended. Claim 36-42 depend on and incorporate the patentable subject matter of independent claim 35, as amended. As such, claims 2-8, 19-25, and 36-42 are patentable and in condition for allowance. Accordingly, Applicants request the Examiner to withdraw the rejection of claims 1-8, 18-25, and 35-42 under 35 U.S.C. §103.

D. Amended Independent Claims 9, 26, and 43 Patentably Distinguished over Bierman

Amended independent claims 9, 26, and 43 are directed towards a method, system and program, respectively. These independent claims recite *requesting to obtain in a programming language an instance of at least one object from a database storing at least one structured document representing one or more objects.* These independent claims further recite obtaining the instance of the object from the database, and generating and providing a structured document representing the object. The structured document includes representing attributes and attribute values for a class.

Bierman does not teach or suggest *requesting to obtain in a programming language an instance of at least one object from a database storing at least one structured document representing one or more objects.* Instead, Bierman describes an XML markup language for a proposed OIF format. As such, Bierman is focused on dumping and loading the current state of an ODMG-compliant ODMS into a file. Furthermore, Bierman does not describe requesting to obtain in a programming language an instance of at least one object from the database to provide a structured document representing the object. Rather, Bierman describes the details of the specification of the proposed OIFML language. Therefore, Bierman does not teach or suggest *requesting to obtain in a programming language an instance of at least one object from a database storing at least one structured document representing one or more objects.*

For the aforementioned reasons, Bierman fails to teach or suggest *requesting to obtain in a programming language an instance of at least one object from a database storing at least one structured document representing one or more objects.* Therefore, Applicants submit that amended claims 9, 26, and 43 are patentable and in condition for allowance. Claims 10-17

depend on and incorporate the patentable subject matter of independent claim 9, as amended. Claims 27-34 depend on and incorporate the patentable subject matter of independent claim 26, as amended. Claims 44-51 depend on and incorporate the patentable subject matter of independent claim 43, as amended. As such, claims 10-17, 27-34, and 44-51 are patentable and in condition for allowance. Accordingly, Applicants request the Examiner to withdraw the rejection of claims 9-17, 26-34, and 44-51 under 35 U.S.C. §103.

E. Amended Independent Claim 52 Patentably Distinguished over Fong

Amended independent claim 52 is directed towards a computer readable medium claim including a computer database of objects. The computer database of objects stores multiple structured documents representing multiple objects and comprises at least one structured document representing an instance of an object including attributes and attribute values defined for a class. The instance of the object is implemented in a programming language. The database includes *a database interface to receive a request to store the instance of the object to the database, and to store content of the structured document representing the instance of the object into the database.*

Bierman does not disclose, teach or suggest *a database interface to receive a request to store the instance of an object implemented in a programming language to the database, and to store content of the structured document representing the instance of the object into the database.* As discussed above, Bierman describes an XML markup language for a proposed OIF format for dumping and loading the current state of an ODMG-compliant ODMS. Thus, Bierman is focused on the specification of the OIFML language. In contrast to the claimed invention, Bierman does not describe a database interface *to receive a request to store the*

instance of the object implemented in a programming language to the database, and to store content of the structured document representing the instance of the object into the database.

Rather, Bierman describes the details of the specification of the proposed OIFML language.

Therefore, Bierman fails to teach or suggest *a database interface to receive a request to store the instance of an object implemented in a programming language to the database, and to store content of the structured document representing the instance of the object into the database.*

For the aforementioned reasons, Bierman fails to teach or suggest *a database interface to receive a request to store the instance of an object implemented in a programming language to the database, and to store content of the structured document representing the instance of the object into the database.* Therefore, Applicants submit that amended claim 52 is patentable and in condition for allowance. Claims 53-59 depend on and incorporate the patentable subject matter of independent claim 52, as amended. As such, claims 53-59 are patentable and in condition for allowance. Accordingly, Applicants request the Examiner to withdraw the rejection of claims 52-59 under 35 U.S.C. §103.

Conclusion

In light of the present amendments and aforementioned arguments, Applicants contend that each of the Examiners rejections has been adequately addressed and the pending application is in condition for allowance.

Should the Examiner feel that a telephone conference with Applicants' attorney would expedite prosecution of this application, the Examiner is urged to contact the Applicants' attorney at (617) 227-7400.

Respectfully submitted,
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